KÖB
Wärme aus Holz

PYROMATECO

Operating and Maintenance Instructions for the PYROMAT ECO 35 to 151

ID: 104642-B English

© by KÖB Holzfeuerungen GmbH
Flotzbachstrasse 33
A-6922 Wolfurt
All rights reserved, including photomechanical
reproduction and storage in electronic media.

Viessmann Group

1 General information 4
1.1 Foreword 4
1.2 Latest developments in the technology 4
1.3 Intended use 4
1.4 Technical specs 4
1.5 Documented information 4
1.6 CE-Symbol 4

2 Important information 5
2.1 Safety information 5
2.2 Excess temperature & power failures 5
2.3 Suitable and approved fuels 6

3 Burner design 7

4 Starting up / Operation 8
4.1 Initial start-up 8
4.2 Starting up 8
4.2.1 Filling 8
4.2.2 Heating up 8
4.2.3 Operation 9
4.2.4 Adding fuel 9
4.3 Oil burners 10
4.3.1 Burner slide 10
4.3.2 Operation with oil burners 10

5 The ECOTRONIC Control System 11
5.1 General information 11
5.1.1 Battery replacement 11
5.2 The functions of the buttons 11
5.3 Boiler, F3 12
5.3.1 F3 Key "PYROMAT parameters" 12
5.4 The F4-F8 extended control systems 13
5.4.1 Room heating unit 13
5.4.2 Utility water heater 15
5.4.3 Air heater 16
5.4.4 Neighbouring buildings 17
5.4.5 Pipeline 18
5.4.6 Additional boilers 19
5.4.7 Solar 20

6 Cleaning 21

7 Shutdowns 22

8 Waste disposal 22

9 Enclosures
- Spec Sheet 1010-1, 2
- Error Reports / Error Correction

1 General information

1.1 Foreword

Dear System Owner, you have made a good selection in the *PYROMAT ECO*. In conjunction with a heat storage unit, it will provide you with all the advantages of a modern, economically efficient heating system. It will provide you with all the advantages of a modern, economically efficient heating system. Fully developed technology in combination with a sturdy design guarantee a high degree of operational reliability and long service life.

These Operating and Maintenance Instructions contain important information for the intended use, correct operation and proper maintenance of the *PYROMAT ECO*.

Non-compliance with the Operating and Maintenance Instructions will result in loss of the guarantee.

If you still need any further information after studying the Operating and Maintenance Instructions:

The Assembly and Installation Instructions contain important information about:
- Standards and regulations,
- Structural surroundings of the burner
- Transport & assembly
- Water installation and electrical installation,
- Fire protection,
- Starting up,

as well as an appendix with diagrams of connections and dimensions as well as the complete technical specifications.

Our sales and services offices will be glad to provide you with any further information. Their addresses can be found on the reverse side of these Operating and Maintenance Instructions.

1.2 Latest developments in the technology

The Operating and Maintenance Instructions are in keeping with the *PYROMAT ECO* at the time it is delivered. In the interest of our customers, we reserve the right to make, without any notification requirement, the following changes resulting from further technology developments.

1.3 Intended use

The intended use of the *PYROMAT ECO* is for incinerating wood fuels.

The intended use of the *PYROMAT ECO* is stipulated:
- in the regulations of the Assembly and Installation Instructions
- by the limits of the technical specifications
- in the section, "Suitable and approved fuels"
- by the safety regulations in these Operating and Maintenance Instructions.

Any other use of the *PYROMAT ECO* or use of it going beyond this will be considered as unintended use unless written approval by the manufacturer has been obtained.

The following, among other things, will be considered as unintended use:
- Operation of the *PYROMAT ECO* by unqualified personnel, without any training or knowledge of the Operating and Maintenance Instructions.
- Disabling the safety or monitoring devices on the *PYROMAT ECO*.
- Removal of any protective covers or cladding on the *PYROMAT ECO* by unauthorised individuals.
- Making any conversions or alterations to the *PYROMAT ECO* without approval by the manufacturer.
- Using spare parts or accessories from other manufacturers without approval by the manufacturer.

The operating organisation will be liable for any damage or accidents in case of any unintended use.

1.4 Technical specs

The following important limits apply to the *PYROMAT ECO* heating boiler:
- Max. operating pressure allowed: 3.0 bar
- Max. boiler temperature allowed: 100°C
- Min. return temperature: 65°C

The complete technical specifications listed in the appendix of the Assembly and Installation Instructions.

1.5 Documented information

The Operating Instructions contain the information required according to the EC Directive on Machinery 98/37/EEC, Appendix 1, Number 1.7.4.

Issue: 2007-08_English
Prepared by: KabW/SclM

1.6 CE-Symbol

The *PYROMAT ECO* is delivered with a CE-symbol on its type plate an EC attestation of conformity in accordance with II A or the EC Directive on Machinery 98/37/EEC.

If the *PYROMAT ECO* is altered by equipment from other manufacturers being added, or the safety equipment or control system are combined with a different system and/or integrated into an overriding system (building control system), then in the European Union a new attestation of conformity has to be issued before it is put on the market.

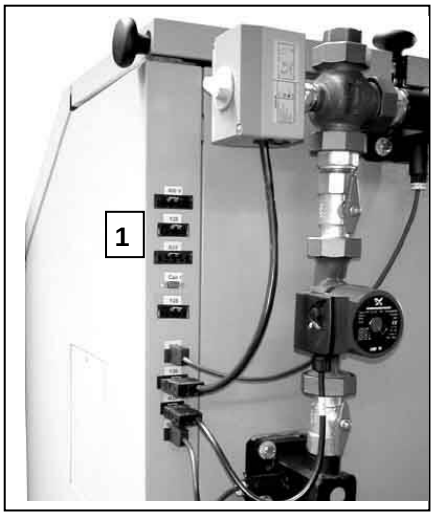
2 Important information

2.1 Safety information

When carrying out work on the heating system, such as cleaning and maintenance, wear appropriate protective equipping when required. There is a danger of getting injured through: burning, knocking against corners and edges, crushing in moving parts and noise.

Mains supply: 230V

In a risky situation, the PYROMAT ECO can be disconnected from the electrical mains at all the leads by plug connector on the rear of the boiler (1).



Doors

When the access door is not opened all the way, it automatically falls back shut.

The burner must never be operated with the doors open!

Any burning bits that escape could result in a fire.

Only open doors during the starting phase and the burn-out phase (for refilling, exhaust gas temperature less than 130°C). If the doors were opened during operation, sparks and tongues of fire could leap out.

Equipment for dissipating excess heat

The functioning of the thermal run-off safety valve must be inspected every year by a competent specialist.
The safety heat exchanger must not under any circumstances be used as an operational heat exchanger.

Seals

It is important for the functioning and controllability of the burner that no unwanted air be able to enter unchecked through leaks.
The doors and lids have to close tightly without leakage. Any damaged seals must be immediately replaced. Tighten snugly the fastening bolts and handles.

Operation, cleaning & maintenance

Bear in mind that only if operated and maintained properly can even the best of products fulfil their functions well, for a long time and free of malfunctions.
Compliance with the "Cleaning" section is mandatory!

2.2 Excess temperature & power failures

Do not open the doors or lids on the burner!

- Switch on additional heat consumers.
- The exhaust fan goes out of operation.
- The temperature-limiting safety switch triggers.
- The valve for the thermal run-off safety valve opens at approx. 95°C. The excess heat is conducted off into the channel.

If the temperature-limiting safety switch (TLSS) has triggered, then it has to be manually unlocked.

The TLSS (temperature-limiting safety switch) is situated in the front metal plate beneath the refill access lid.

To reset, unscrew the black cap and press the button.
IMPORTANT: Resetting is only possible at a boiler temperature of less than 70° C.

Possible causes for excess temperature:
- Incorrect setting on the control module.
- Defective component of the system (pump or valve).

2.3 Suitable and approved fuels

The KÖB PYROMAT ECO is designed for heating chopped wood and wood waste and can be optionally equipped with an oil or gas burner.

Important prerequisites for the wood

The wood must be air-dry. One to two and a half years are necessary for natural drying. This drying can be carried out outdoors (covered) in part and should then be continued for at least one year in a suitable shed. The water content should amount to a maximum of 25% (w 25).

Bear in mind:
Wood that has been stored for too short a time and is still moist only has about half of its potential thermal power!

Types of wood

The KÖB PYROMAT ECO is especially well suited for the types of wood listed below:

- Air-dry, chopped wood in its natural state, such as split wood, billet wood and round wood.
  Hardwood: max. ∅ 15 cm
  Soft wood: max. ∅ 12 cm

  Guideline figures for storage (for dry storage)
  Hardwood: 2 to 2½ years
  Soft wood: 1 to 1½ years

- Non-pelletised wood in its natural state (max. water content of 25%) in the form of coarse chips, woodchips, including bark adhering with an edge length of → greater than 5 cm

- Compressed wood from chips, unless manufactured using bonding agent. Diameter → greater than 4 cm

- Carpentry shop waste in the form of glued wood and wood remnants, provided no wood preservatives have been applied or are contained.
  Edge length → greater than 5 cm

- Addition of a max. of 20% of brown coal briquettes to extend the combustion time.

Length of wood

Pyromat 35, 45, 55, 65, 75, 85 → max. ½ m
Pyromat 61, 81, 101, 151 → max. 1 m

Be sure to note:

The boiler is only suited for incinerating the wood fuels and wood mixtures listed here.

If different fuels are used, KÖB will not assume any liability for the functioning or service life of the boiler.

It is not allowed to incinerate wastes or wood in these heating systems that has been treated with wood preservatives or the coating of which consists of halogenated organic compounds. In addition to the development of highly toxic exhaust gases, severe corrosion damage may also occur in the boiler due to these chemical compounds (hydrochloric acid).

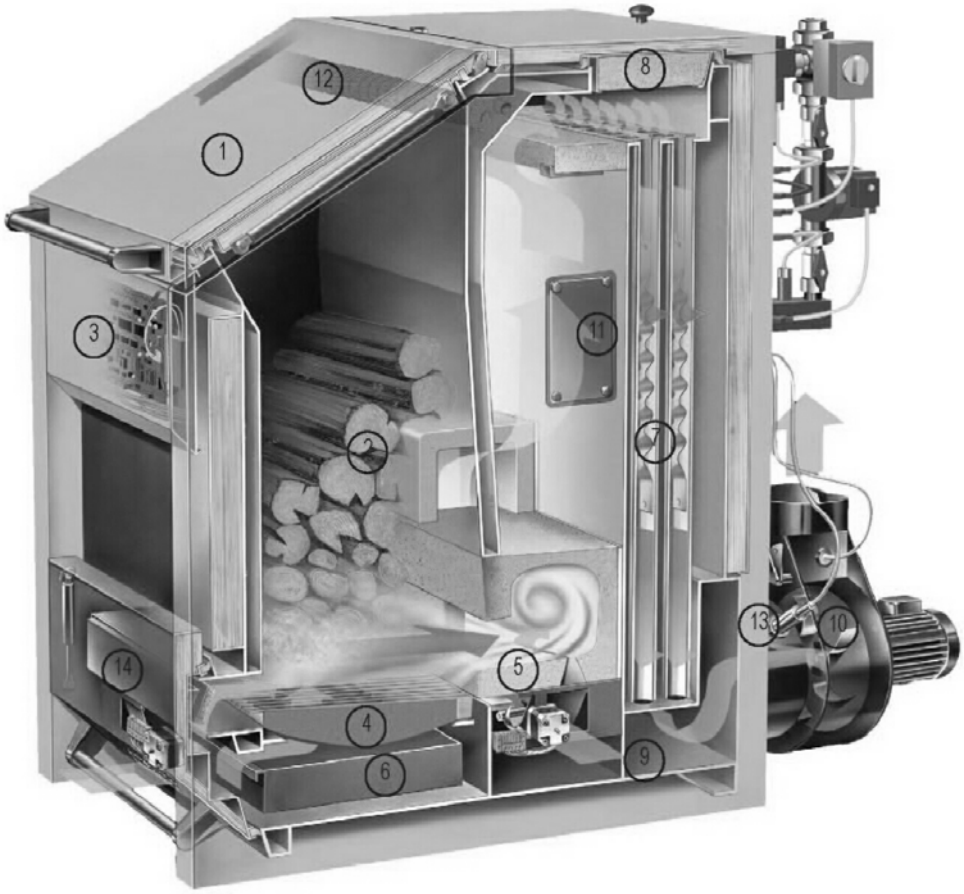
The following must not be incinerated:

- Hard coal or coke
- Wood waste with coatings made of halogenated organic compounds (PVC)

Operation with an oil/gas burner:

Fuel: Extra-light heating oil

3 Burner design



(Picture: *PYROMAT ECO 55*)

(1) Large firebox with easily accessible access door
(2) Downwardly conical firebox
(3) Electronic boiler control panel
(4) Degasification zones with cast iron grating and fireclay bed
(5) Hot tunnel made of highly refractory concrete for re-incineration
(6) Large, easily accessible ash pan for the grate ash
(7) Vertical pipe-type heat exchanger
(8) Cleaning lid on top
(9) Ash container under heat exchanger
(10) Exhaust fan
(11) Maintenance cover or burner connection
(12) Safety heat exchanger
(13) Lambda sensor
(14) Ash pan lid

4 Starting up / Operation

4.1 Initial start-up

The initial start-up is carried out either by KÖB Holzfeuerungen GmbH or another heating specialist.

Be absolutely sure to follow the instructions in the Assembly and Installation Instructions. No guarantee may be claimed in cases of initial start-ups carried out improperly by oneself.

First check:

- Is there enough water in the heating system?
- Has the heating system been bled?
- Are the slide valves open to the heating forward and reverse flow?
- Can enough fresh air get into the heating room?
- Are the doors and lids on the burner all closed leak-tight?

4.2 Starting up

Check the storage unit temperature! Check whether the storage unit temperature has dropped so far that heating up is practical, and whether the amount of heat to be expected can be accepted or stored.

Maximum storage unit temperature: 90°C

4.2.1 Filling

CAUTION: Never fill shavings or woodchips directly from the grate → There is a danger such going up in flames suddenly!

- The slots in the grate have to be free of ash. Only charcoal (approx. 2 cm) may remain lying on the grate. Evenly spread out paper on this (better than cardboard) and easily combustible wood over the entire width of the burner (approx. 25 cm high). Position the pieces of wood crosswise such that a layer permeable to air is created.

Finer material may only be filled on the layer of chopped wood.

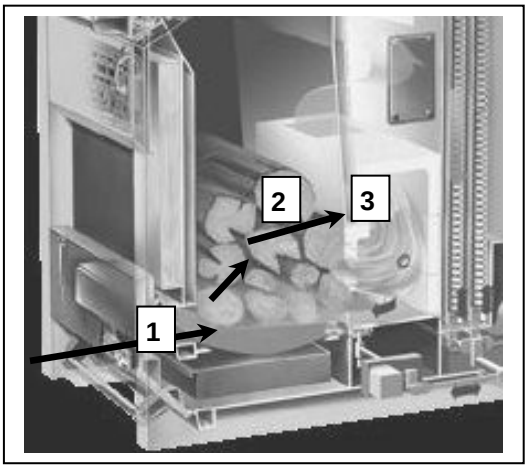
- Neatly lay the billet wood and logs horizontally and compactly over the entire width of the firebox.
- Only refill as much wood as energy that the storage unit can still accommodate until the maximum storage unit temperature of 90°C is reached.
- When closing the access door, be sure that the supporting surface for the refill access lid seal is clean.

Note that even a small ember remaining can also inadvertently ignite the kindling wood.

4.2.2 Heating up

Kindling

- Is the airway (1) to (3) clear through the entire area of the grate, through fuel at the bottom and into the combustion chamber? Is the lower part of the wood loaded (2) permeable to air?



- Open the ash pan lid. Ignite, ideally doing so over the entire width of the firebox,
- such that the fire spreads over the entire area of the grate as quickly as possible.
  Aim to keep the heating-up procedure short, quickly producing a lot of heat and embers. Rapid heating up of the combustion chamber rapidly produces perfect incineration.
- Press the F1 button "PYROMAT Wood".
- Leave the ash pan lid approx. 10 cm open until the material to be burned has started to burn well.
- When the temperature of the exhaust gas reaches approx. 110°C, close the ash pan lid.

4.2.3 Operation

- All the lids and doors have to be closed with no leakage during the burn-off.
- The temperature of the exhaust gas should rise to 130°C to 150°C in just a few minutes, and be between 160°C and 200°C in continuous operation.
- If the temperature of the exhaust gas prematurely drops back down during the burn-off, you have a hollow fire.
  Cause: Pieces of wood have been poorly stacked or are irregular.
  Remedy: Carefully open the ash pan lid and with a poker spread the wood over the entire bed of embers.

Combustion time for:
- Each loading of wood from deciduous trees: approx. 4 hours
- Each loading of wood from coniferous trees: approx. 3 hours

4.2.4 Adding fuel

First check:

- Check the storage unit temperature! Can the energy to be expected be accepted or stored? Maximum storage unit temperature: 90°C.
- Is the burner already in the burn-out phase (exhaust gas temperature below 130°C)?
- Is the exhaust gas fan already out of operation?

Adding fuel:

- If the exhaust gas fan is already out of operation:
  Press the F1 button "PYROMAT Wood".

- If the exhaust gas fan is still in operation: Before adding, press the F1 button "PYROMAT Wood" (Add Fuel function). This will bring about fast stabilisation of the operation.

- First only raise the access door slightly, so that any accumulation of low-temperature gas present in the upper part of the firebox can be suctioned off.

- Then unlock the safety lock (1) and open the lid all the way.

- Neatly lay the billet wood and logs horizontally and compactly over the entire width of the firebox. Only refill as much wood as energy that the storage unit can still accommodate.

I M P O R T A N T: Do not put any wood shavings or fine chips directly onto the embers → There is a DANGER such GOING UP IN FLAMES SUDDENLY!

- Close access door. Be sure that the supporting surface for the refill access lid seal is clean.

Afterwards check:

- The surface of the ceramic combustion chamber should remain white.
- The vertical pipe-type heat exchanger must not have any shining soot or tar deposits.
- The ash content is very low when the wood incinerates in a controlled fashion (approx. 1 percent by weight). The ash should be grey!

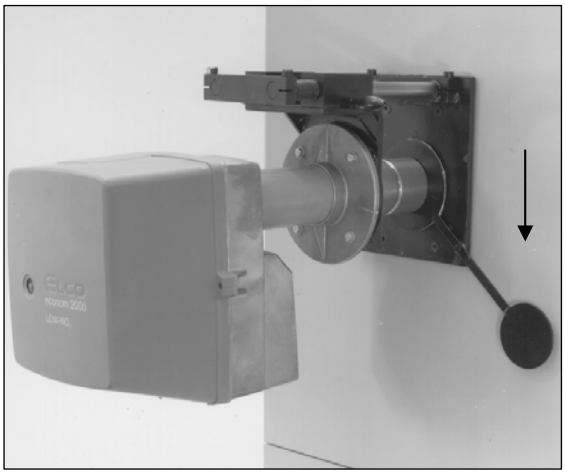
4.3 Oil burners

The initial start-up has to be carried out by a heating systems specialist. Be sure to also follow the instructions in the Installation Instructions.

4.3.1 Burner slide

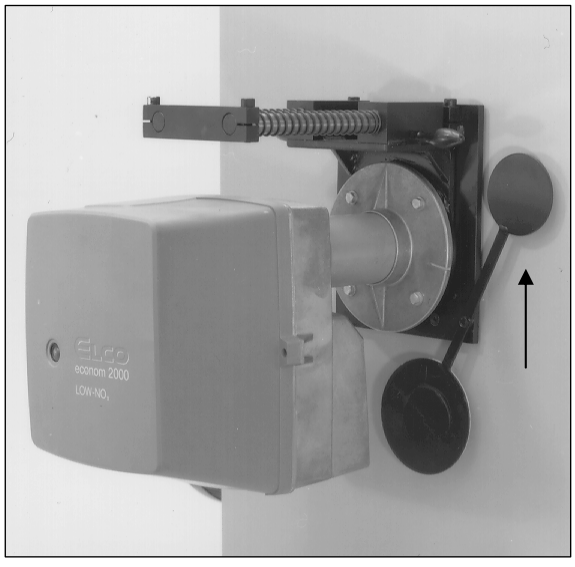
Running out the oil burner (for operation with wood):

- Pull the burner slide to the rear and close the shutter.



Running in the oil burner (for operation with oil burner):

- First pull the burner slide to the rear a bit and open the shutter.
- Run the oil burner all the way in.



CAUTION:
If the burner remains run in during operation with wood, trouble with the burner might result.

4.3.2 Operation with oil burners

- Run the oil burner in.
- Press the F2 key "PYROTMAT OIL" (preselection).
- The oil burner will be started automatically when there is a prompt for heat.
- The air vents will be closed automatically.

Service function (only for specialists)

NOTE: This function can only be activated in the operating mode "UTILISATION OF RESIDUAL HEAT" or "WITHDRAW FROM STORAGE UNIT".

- Press and hold down the "OK" button.
- Then press the F2 key "PYROTMAT OIL" once.
- Then release the "OK" button.
- The relevant information will appear on the control panel.

CAUTION: No regulating of temperature during the service function → Danger of excess temperature. Be sure to watch the boiler temperature.

Completing the service function:
- Press the F2 key "PYROTMAT OIL"

5 The ECOTRONIC Control System

5.1 General information

The ***ECOTRONIC*** facility control system is a de-centralised microprocessor system (CAN-BUS) developed by ***KÖB*** with various modules that are connected by a data transmission line.

Its function

The ***ECOTRONIC*** records all the data relevant to operation and controls the supply of and demand for heat.

Thus the burner system is continuously monitored during all the operating phases and kept within an optimum range in terms of emissions.

Factory settings (pre-settings)

All the parameters in the ***ECOTRONIC***, including set point values and switching times, are pre-set and can be called back up at any time. The figures for the factory settings are given in brackets for the various parameters.

5.1.1 Battery replacement

There is a battery built in beneath the removable lid on the control module (type: Panasonic Lithium BR2330). It is for buffering the time, date and settings.

- **The battery needs replacing every five years!**
- **Do not disconnect the mains voltage while changing the battery (do not turn off master switch)!**

5.2 The functions of the buttons

F1 (PYROTMAT Wood)
Switch on wood-burning operation.

F2 (PYROTMAT Oil)
Switch the oil burner on the PYROMAT on or off.

F3 (PYROMAT parameters)
Set parameters, set point values, time and date.

F4 (Group 1)
Setting parameters and set point values (heat distribution, Group 1)

F5 (Group 2)
Setting parameters and set point values (heat distribution, Group 2)

F6 (Group 3)
Setting parameters and set point values (heat distribution, Group 3)

F7 (Group 4
Setting parameters and set point values (heat distribution, Group 4)

F8 ((Group 5)
Setting parameters and set point values (heat distribution, Group 5)

< Go one page to the left in menu masks

> Go one page to the right in menu masks

∧ Go one line up
(Only possible when the scroll up symbol ↑ is displayed.)

∨ Go one line down
(Only possible when the scroll down symbol ↓ is displayed.)

+ Change numeric values and set point values

- Change numeric values and set point values

OK Adopt (acknowledge) settings and/or changes

The following applies to the F3, F4, F5, F6, F7 & F8 buttons:
- Pressing once will take you to the respective menu. As feedback, the relevant LED will blink.
- If a set point value is changed and not confirmed with "OK", then it will not be adopted.
- Pressing the function button again will bring back the normal display
- When no button is pressed for a period of sixty seconds, the normal display automatically re-appears.

NOTE:
Depending on the execution and setting, some menus and texts do not appear.

5.3 Boiler, F3

5.3.1 F3 Key "PYROMAT parameters"

(mask number) parameter (factory setting)

(01) Storage unit temperatures (-):
Indication of all the storage unit temperatures

(02) Return flow, burner (70°C):
Set point value for burner return circuit valve

(03) Forward flow, burner (80°C):
Set point value for storage unit loading temperature
(only when controlled storage unit loading is "YES", or oil/gas burner → Service menu)

(04) Exhaust gas, burner (200°C):
Limit of maximum exhaust gas temperature

(05) Exhaust gas, residual O_2 (7%):
Set point value for residual oxygen for air vent control

(06) O_2-control (ON):
Switch O_2-control on and off

(07) Air vents without O_2-control (30%):
Position of the air vents with O_2-control switched off

(08) Carry away excess heat at (95°C):
Limit temperature for carrying away excess heat

(12) System Temperature Set Point Minimum (50°C):
Minimum forward flow temperature for heat distribution provided by customer (only if System Temperature Set Point Minimum YES → Service Menu)

(14) Wood-burning operation (0):
Operating hours/minutes, wood-burning operation, PYROTMAT ECO

(15) Date / Year (current):
Set year

(16) Datum - Monat (aktuell):
Einstellung Monat

(17) Date / Day (current):
Set day

(18) Date / Day of week (current):
Set day of week

(19) Date / Hours (current):
Set hours

(20) Date / Minutes (current):
Set minutes

(22) Enter permanent code (-):

Additional parameters for oil/gas burner on the Pyromat ECO (factory setting)

(. .) Loading of storage unit with oil/gas operation (NO):
Select storage unit loading YES/NO.

(. .) Load storage unit with oil/gas operation to storage unit (storage unit, bottom):
Select storage unit loading level for oil/gas burner operation (only when storage unit loading with oil/gas burner operation is YES).

(. .) Loading storage unit with oil/gas operation to (70°C):
Temperature set for storage unit (only when storage unit loading with oil/gas burner operation is YES).

(. .) Oil/gas operation (0):
Operating hours, oil/gas burner on the Pyrotmat ECO

5.4 The F4-F8 extended control systems

The F4 to F8 buttons are assigned customer-specific extended control systems as desired.
Each extended control system is assigned a separate button.

5.4.1 Room heating unit

Function (ECO-H):

Weather-controlled regulation of heating with digital timer for lowerable operation according to a daily or weekly programme, with pump control, frost protection function, ECOcircuit and limited supply temperature.

Operating modes

- **Off:**
  The room heating unit is switched off.
- **Day / Night:**
  Heating operation according to clocked programme. Normal temperature during the day and reduced temperature at night.
- **Day / Off:**
  Heating operation according to clocked programme. Normal temperature during the day and switched off at night.
- **Day:**
  Normal temperature continuously.
- **Night:**
  Reduced temperature continuously.
- **Manual:**
  Pump on; valve is not controlled (emergency operation)

(Mask number) Parameter (Factory setting)

(01) Operating mode (Day / Night)
Selection of operating mode

(02) Number of heating periods (1)
The weekly programme has to be entered in the form of heating periods. Each weekly programme consists of the heating day, start and end. A maximum of seven heating periods is available.

(03) Heating Day 1; Heating days (MON to SUN)
Day or days on which the switching times apply. Select the heating days with Buttons F1 (for Monday) to F7 (for Sunday). Press the button once → selects the day, pressing the button again → drops the day.
Only with the operating modes Day/Night or Day/Off

(04) Heating Period 1; Start (6:00)
The switch-over time from lowered temperature (or Off) to normal temperature
Only with operating modes Day/Night and Day/Off.

(05) Heating Period 1 / End (22:00)
The switch-over time from normal temperature to lowered temperature (or Off)
Only with the operating modes Day/Night or Day/Off.

(06-23) Heating Periods 2-7
These depend on the number of heating periods (see Mask 2), consisting of heating days, start and end.

(24) Temperature of flow / at +5°C (43°C)
Desired flow temperature at atmospheric temperature of +5°C (see heating curve).

(25) Temperature of flow; at -15°C (64°C)
Desired flow temperature at atmospheric temperature of -15°C (see heating curve).

(26) Temperature Room Day (20°C)
Setting for temperature of room during daytime operation. (Only with the room thermostat option)

(27) Temperature Room Night (15°C)
Setting for temperature of room during night-time operation. (Only with the room thermostat option)

(28) Night-time lowering of flow temperature by (-6°C)
This temperature set is subtracted from the flow temperature calculated for night-time lowering.

(29) Flow temperature / Maximum (70°C)
Maximum limit of flow temperature.

(30) ECOcircuit (YES)
The ECO automatic savings system makes the heating switch on and off as required.

(31) Switch off below system temperature (NO)
Should the room heating unit group be switched off when a minimum system temperature is fallen short of?

(32) Frost protection function (YES)
With the frost protection function switched on, the room heating unit is turned on when there is a danger of frost.

(33) Carry off excess heat (NO)
In case of danger of the *PYROMAT ECO* overheating (e.g. owing to being refilled with too much fuel), there is the option of the excess heat being carried off. The room unit adjusts to "Flow temperature / Maximum".

The heating curve

The correspondence of the flow temperature to the outdoor temperature can be set directly and read directly. The setting is carried out by two points:

Point 1:
Flow temperature at atmospheric temperature of +5°C (setting range from 20°C to 90°C).

Point 2:
Flow temperature at atmospheric temperature of -15°C (setting range from 20°C to 90°C).

I M P O R T A N T:
Point 2 always has to be higher than Point 1!

The two points marked indicate the factory setting. Point 1 is set to 43°C and Point 2 to 64°C. This is equivalent to a steepness of approx. 1.5.

Room thermostat (option):

The Model QAA 35 Room Thermostat can be used **with or without influence by the room temperature**.

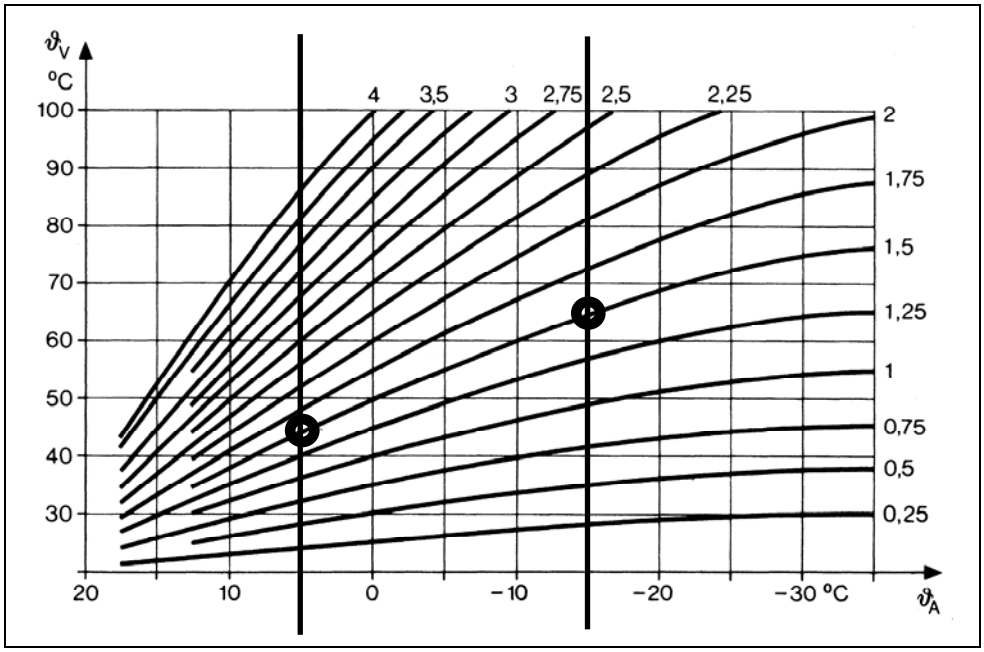
Possible switch positions:

- Position: Auto
  Heating operation following clocked programme according to setting in the *ECOTRONIC*.

- Position:
  Continuous normal temperature.
  (The operating mode set in the *ECOTRONIC* will be ignored.)

- Position:
  Continuous reduced temperature.
  (The operating mode set in the *ECOTRONIC* will be ignored.)

(Fig: Heating curve)



+5°C
Point 1

-15°C
Point 2

5.4.2 Utility water heater

Function:

- **ECO-B1**
  When the temperature of the utility water drops, it is reheated by the built-in heat exchanger from the burner or from the heat accumulator. The condition for this is a relevant difference in temperature (choice of preset temperature difference or fixed preset temperature).

  The heating periods (daily and weekly programmes) can be set using the integrated timer.

- **ECO-B2**
  When the temperature of the utility water drops, it is reheated by the built-in heat exchanger from the burner or from the heat accumulator. The condition for this is a relevant difference in temperature (choice of preset temperature difference or fixed preset temperature).

  The flow rate of the heating water is controlled by the return temperature (quantity control). This produces optimum storage stratification with long-lasting high temperature on the storage unit flow pipe.

  The heating periods (daily and weekly programmes) can be set using the integrated timer.

Operating modes:

- **Off:**
  The utility water heating system is switched off.

- **Timer:**
  Utility water heating following clocked programme. (The boiler is only warmed up during the heating period.)

- **On:**
  The boiler is heated up on request for heat and when there is sufficient system temperature.

- **Manual:**
  Pump on; valve is not controlled (emergency operation)

(Mask number) Parameter (Factory setting)

(01) Operating mode (timer)
Select operating mode

(02) Number of heating periods (1)
The weekly programme has to be entered in the form of heating periods. Each weekly programme consists of the heating day, start and end. A maximum of seven heating periods is available.
(Only with TIMER operating mode)

(03) Heating Period 1 / Heating days (MON to SUN)
Days on which the boiler loading is cleared for. Select the heating days with Buttons F1 (for Monday) to F7 (for Sunday). Press the button once → selects the day, pressing the button again → drops the day.
(Only with TIMER operating mode)

(04) Heating Period 1 / Start (6:00)
Start, clearance, utility water heating
(Only with TIMER operating mode)

(05) Heating Period 1 / End (22:00)
End, clearance, utility water heating
(Only with TIMER operating mode)

(06-23) Heating Periods 2-7
These depend on the number of heating periods (see Mask 2), consisting of heating days, start and end.

(24) Temperature of utility water (60°C)
Set the desired temperature of the utility water.

Additional parameters for ECO-B2

(Mask number) Parameter (Factory setting)

- **Temperature of return flow __°C higher than the temperature of the utility water (20°C)**
  Desired set-point temperature of return flow: actual boiler temperature plus the amount set here.

5.4.3 Air heater

Function (ECO-L):

The air heaters are supplied with maximum flow temperature from the burner storage system. The fans are connected by switches or controllers provided by the customer. The flow rate of the heating water is controlled by the temperature of the return flow and thus adjusted to the air heater's thermal output (quantity control). This produces optimum storage stratification with long-lasting high temperature on the storage unit flow pipe.

The heating periods (daily and weekly programmes) can be set using the integrated timer.

Operating modes:

- **Off:**
  The air heater is switched off

- **Day / Off:**
  Heating operation following clocked programme. During the day the system is adjusted to the set point value for return flow, and at night it is off.

- **Day:**
  Adjusted to the set point value for return flow (continuous operation)

- **Manual:**
  Pump on; the valve is not controlled (emergency operation)

(Mask number) Parameter (Factory setting)

(01) Operating mode (Day / Off)
Select operating mode

(02) Number of heating periods (1)
The weekly programme has to be entered in the form of heating periods. Each weekly programme consists of the heating day, start and end. A maximum of seven heating periods is available.

(03) Heating Period 1 / Heating days (MON to SUN)
Day or days on which the switching times apply. Select the heating days with Buttons F1 (for Monday) to F7 (for Sunday). Press the button once → selects the day, pressing the button again → drops the day.
(Only with the operating mode Day/Off)

(04) Heating Period 1 / Start (6:00)
Time to switch on air heater
(Only with the operating mode Day/Off)

(05) Heating Period 1 / End (22:00)
Time to switch off air heater
(Only with the operating mode Day/Off)

(06-23) Heating Periods 2-7
These depend on the number of heating periods (see Mask 2), consisting of heating days, start and end.

(24) Temperature of return flow (60°C)
Desired temperature of return flow

(25) ECOcircuit (YES)
The ECO automatic savings system makes the heating switch on and off as required.

(26) Switch off below system temperature (NO)
Should the air heater group be switched off when a minimum system temperature is fallen short of?

(27) Frost protection function (YES)
With the frost protection function switched on, the air heater is turned on when there is a danger of frost.

(28) Carry off excess heat (NO)
In case of danger of the *PYROMAT DYN* overheating (e.g. through too much fuel added in manual operation), there is the option of the excess heat being carried off. The air heater adjusts to "Flow temperature / Maximum".

5.4.4 Neighbouring buildings

Function (ECO-N):

The pipeline is usually supplied with a lowered temperature required by the weather-guided heating control system. The utility water heater is loaded with the maximum flow temperature set. To do so, the heating water is re-channelled by a valve to the utility water heater. The integrated timer shifts this to non-productive times, where the room heating unit is quickly interrupted.

Operating modes for the room heating unit

- **Off:**
  The room unit is switched off.

- **Day / Night:**
  Heating operation following clocked programme. Normal temperature during the day, and reduced temperature at night.

- **Day / Off:**
  Heating operation following clocked programme. Normal temperature during the day, and off at night.

- **Day:**
  Normal temperature continuously

- **Night:**
  Reduced temperature continuously

- **Manual:**
  Pump on; the valve is not controlled (emergency operation)

(Mask number) Parameter (Factory setting)

(01) Operating mode (Day / Night)
Select operating mode

(02) Number of heating periods (1)
The weekly programme has to be entered in the form of heating periods. Each weekly programme consists of the heating day, start and end. A maximum of seven heating periods is available.

(03) Heating Period 1; Heating days (MON to SUN)
Day or days on which the switching times apply. Select the heating days with Buttons F1 (for Monday) to F7 (for Sunday). Press the button once → selects the day, pressing the button again → drops the day.
Only with the operating modes Day/Night or Day/Off.

(04) Heating Period 1 / Start (6:00)
Switch-over time from lowered temperature (or Off) to normal temperature.
Only with the operating modes Day/Night or Day/Off.

(05) Heating Period 1 / End (22:00)
Switch-over time from normal temperature to lowered temperature (or Off).
Only with the operating modes Day/Night or Day/Off.

(06-23) Heating Periods 2-7
These depend on the number of heating periods (see Mask 2), consisting of heating days, start and end.

(24) Flow temperature; at +5°C (43°C)

(25) Flow temperature; at -15°C (64°C)

(26) Temperature, Room, Day (20°C)
Set point room temperature, daytime operation.
(Only with the room thermostat option)

(27) Temperature, Room, Night (15°C)
Set point room temperature, nighttime operation.
(Only with the room thermostat option)

(28) Nighttime lowering of the flow temperature by (-6°C)
This temperature set is subtracted from the flow temperature calculated for nighttime lowering.

(29) Flow temperature; maximum (70°C)
The maximum limit for the flow temperature

(30) ECOcircuit (YES)
The ECO automatic savings system makes the heating switch on and off as required.

(31) Switch off below system temperature (NO)
Should the room heating unit group be switched off when a minimum system temperature is fallen short of?

(32) Frost protection function (YES)
With the frost protection function switched on, the room heating unit is turned on when there is a danger of frost.

(33) Carry off excess heat (NO)
In case of danger of the PYROMAT ECO overheating (e.g. through too much fuel added in manual operation), there is the option of the excess heat being carried off. The room unit adjusts to "Flow temperature / Maximum".

The heating curve

See "Extended control system for room heating unit"

Room heating unit:

See "Extended control system for room heating unit"

Operating modes of the utility water heater:

- **Off:**
  The utility water heating system is switched off.

- **Timer:**
  Utility water is heated following a clocked programme (the boiler is only heated during the heating period).

- **On:**
  The boiler is heated on request for heat and when there is sufficient system temperature.

- **Manual:**
  Pump on; the valve is not controlled (emergency operation).

Utility water heater (Mask number) Parameter (Factory setting)

(34) Operating mode (timer)
Select operating mode

(35) Number of heating periods (1)
The weekly programme has to be entered in the form of heating periods. Each weekly programme consists of the heating day, start and end. A maximum of seven heating periods is available.
(Only with TIMER operating mode)

(36) Heating Period 1; Heating days (MON to SUN)
Day or days on which the switching times apply. Select the heating days with Buttons F1 (for Monday) to F7 (for Sunday). Press the button once → selects the day, pressing the button again → drops the day.
(Only with TIMER operating mode)

(37) Heating Period 1 / Start (6:00)
Start, clearance, utility water heating
(Only with TIMER operating mode)

(38) Heating Period 1 / End (22:00)
End, clearance, utility water heating
(Only with TIMER operating mode)

(39-56) Heating Periods 2-7
These depend on the number of heating periods (see Mask 35), consisting of heating days, start and end.

(57) Temperature of utility water (60°C)
Set the desired temperature of the utility water.

5.4.5 Pipeline

Function (ECO-F):

This is for neighbouring buildings with a separate heat distribution system, which is supplied with heat via a pipeline. According to requests by the heat distribution system, the temperature of the pipeline is pre-adjusted for the lowest loss in the line.

Operating modes:

- **Off**
  Pump off; valve closed

- **Automatic**
  Adjustment to the temperature requested

- **Manual**
  Pump on; the valve is not controlled (emergency operation).

(Mask number) Parameter (Factory setting)

(01) Heating / Operating mode (Automatic)
Select operating mode

(02) Frost protection function (YES)
With the frost protection function switched on, the pipeline is turned on when there is a danger of frost.

(03) Flow temperature; minimum (20°C)
Minimum temperature desired

(04) Flow temperature; maximum (60°C)
Maximum temperature desired

5.4.6 Additional boilers

Function:

- **Boiler, single (ECO-KE)**
  To cover the heat requirement (single operation), an additional boiler is automatically connected after the heat is removed from the storage unit. Loading of the storage unit is only possible with the *PYROMAT ECO*. When it is put into operation, the additional boiler switches off, and the closed shut-off valve prevents it from being flowed through.

- **Boiler, single, gliding (ECO-KG)**
  To cover the heat requirement (single operation), an additional boiler is automatically connected after the heat is removed from the storage unit. Loading of the storage unit is only possible with the *PYROMAT ECO*. When it is put into operation, the additional boiler switches off, and the closed shut-off valve prevents it from being flowed through. The boiler temperature is adjusted in gliding fashion to the minimum temperature according to the heat requirement.

- **Boiler, parallel (ECO-KP)**
  An additional boiler is automatically connected when required. This may take place to cover the heat requirement after the heat is removed from the storage unit (single operation). Or the additional boiler serves to cover peaks in heat requirements (parallel operation to the *PYROMAT ECO*). For parallel operation, a burner group is necessary to carry off heat that simultaneously provides for keeping up the return flow.

Operating modes:

- **Off:**
  The additional boiler is switched off.

- **Automatic:**
  Automatic clearance of the additional boiler through a request by a heat consumer, or (only ECO-KP) when an adjustable connecting temperature for the wood-powered boiler is fallen short of.

- **On:**
  The additional boiler has been cleared.

- **Manual:**
  The additional boiler has been cleared, and (only ECO-KP) the pump is on; the valve is not controlled (emergency operation).

(Mask number) Parameter (Factory setting)

(01) Operating mode (automatic)
Select operating mode

(02) Delay before connecting (15 min)
Clearance is given when the time set is up.

(03) Connecting temperature, system set-point temperature (-15°C)
If the system temperature falls by this amount below the system set-point temperature, the delay before connecting (Fig 2) begins to lapse.

(04) Switch-off temperature for system set-point temperature (- 5°C)
Switch-off difference with parallel operation and loading of storage unit: NO

(05) Forward flow, burner / Maximum (80°C)

(06) Forward flow, burner / Minimum (20°C)

(07) Set-point temperature of return flow (50°C)
The set-point value for the temperature of the return flow

(08) Loading, storage unit (NO)
Should the storage unit be heated up by the additional boiler?

(09) Loading, storage unit up to (storage unit top)
Up to which heat storage sensor should the storage unit be heated up?

(10) Loading, storage unit up to (70°C)
Up to what temperature at the heat storage sensor selected should the additional boiler heat up the storage unit?

(12) Service function of additional boiler
A maintenance function for the specialist

(13) Operating hours counter

5.4.7 Solar

Function (ECO-S1):

This is used in simple solar systems with a single control circuit to heat the utility water in the solar utility water heater (Art No: WSS- ...). The ECO-S1 controller is an additional component for the ECO-B1(2) controller for the utility water heater. When the solar collector is hotter than the utility water at the bottom, it is heated up by the solar collector.

Operating modes

- **Off:**
  Pump off; valve shut
- **Automatic:**
  Automatic heating of the solar utility water heater by means of difference-based control.
- **Manual:**
  Emergency operation: Pump on.

(Mask number) Parameter (Factory setting)

(01) Operating mode (automatic)
Select operating mode

(02) Temperature of utility water / Maximum (65°C)
The maximum temperature of the utility water with solar heating

(04) Collector / Utility water;
Set difference (10°C)
The difference between the solar collector and the utility water heater at the bottom

(10) Operating hours counter

Function (ECO-S3):

This is used in large solar systems to heat the utility water in a solar utility water heater (Art. No: WSS-...) and for supplying heat to the heat storage tank by means of a triple control circuit. The first circuit is for heating up the utility water, the second circuit is for heating up the heat storage tank at the rear/bottom, and the third circuit is for heating up the heat storage tank in front/at the top. The heating storage unit is heated up by an externally situated plate-type heat exchanger. On switchover from utility water heater to heating storage unit, the secondary pump is switched on, which is then in operation with the solar pump. For optimised functioning, the flow rate in the secondary circuit has to be adapted to the primary circuit (e.g. with flow rate gauges in the primary and secondary circuits).

Operating modes

- **Off:**
  Pump off; valve shut
- **Automatic:**
  Automatic heating of the solar utility water heater by means of difference-based control.
- **Manual:**
  Emergency operation → Solar pump and secondary pump on; valves are not controlled (emergency operation).

(Mask number) Parameter (Factory setting)

(01) Operating mode (automatic)
Select operating mode

(02) Temperature of utility water; maximum (65°C)
The maximum temperature of utility water with solar heating.

(03) Priority to utility water (optimised)

- Optimised:
Priority to loading utility water, but if the solar output is not sufficient to finish loading the utility water heater, there is a switchover to solar heated heating. If the solar output rises (cyclical examination) so much that heating of utility water is possible, there is again a switchover to solar heated utility water.

- Absolutely:
Loading utility water has absolute priority, i.e. solar heated heating is not allowed until the utility water heater has been completely loaded.

- No:
Solar heating of utility water / Heating according to the temperature difference between the collector and the utility water at the bottom or the collector and the storage unit at the bottom

(04) Collector / Utility water; set difference (10°C)
The temperature difference between the collector and the utility water at the bottom for solar utility water heating.

(05) Collector / Storage unit; set difference (15°C)
The temperature difference between the collector and the storage unit at the bottom for solar heating system heating.

(10) Operating hours counter

6 Cleaning

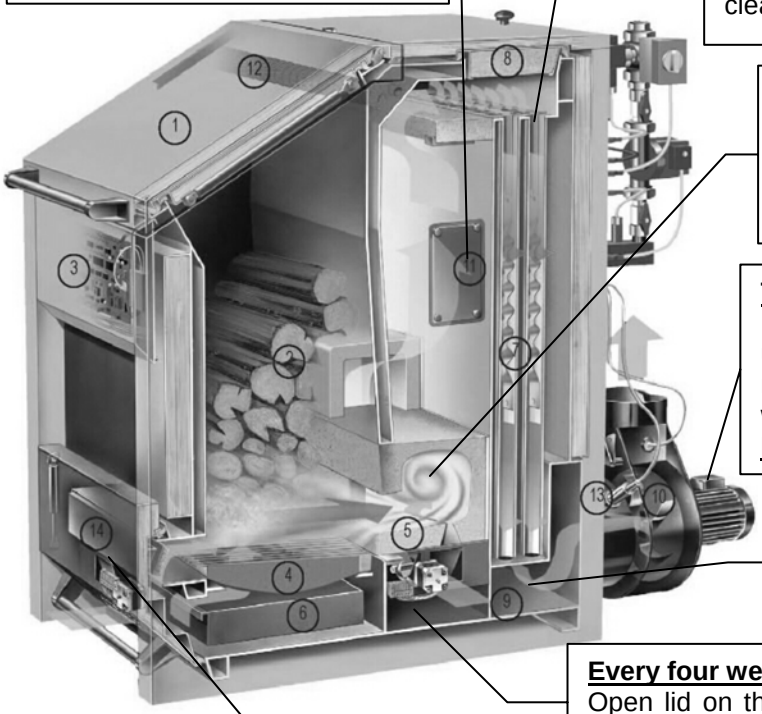
Regular cleaning of the facility is the customer's most important job for years of trouble-free operation and to obtain the greatest possible output with the best efficiency.

The cleaning intervals may vary, depending on the fuel, the amount of fine matter and the operating method.

CAUTION – RISK OF INJURY: Before beginning cleaning work, put the facility out of operation. Be absolutely sure to wear protective gloves, protective eyewear if required and use the cleaning utensils that come with the facility – danger of blow-ups, burns and getting crushed!

Twice per year:
Take off the panelling, undo the thumb screws, take off the lid and clean the combustion chamber with a vacuum cleaner.

Every two weeks:
Pull the exhaust turbulators out of the pipes and dust or sweep them off. (Only with *PYROMAT ECO*- 45, 65, 85, 81 and 151).
Then go through the bundle of tubes with the cleaning brush that comes with the system.



Twice per year:
The fireclay-lined combustion chamber has to be cleaned by a chimneysweep using a vacuum cleaner from the front through the opened ash pan lid.

Twice per year:
Unplug the plug from the exhaust gas fan, unscrew the thumb screws, pull out the motor with the running wheel and clean with broom or wire brush. **IMPORTANT: DANGER OF GETTING INJURED!**

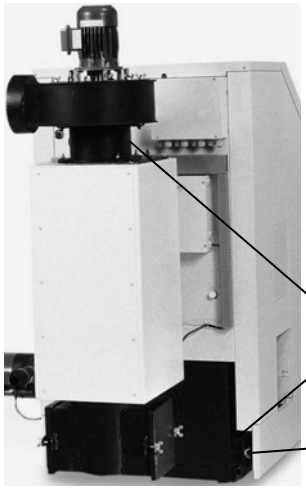
Every two weeks:
Open the lid on the side. Remove soot and dust using the rear ash pan.

Every four weeks:
Open lid on the side (possible on both sides) and clean the secondary air duct.

Every day:
Open ash pan lid and with a poker move the fine ash through slots in the grate into the ash pan.
If a lot of paper has been burned, completely remove the ash from the grate.
If only wood has been burned, it is sufficient to evenly distribute the charcoal.
When a lot of paper and cardboard are burned, the inlet into the combustion chamber might also be clogged. If necessary, clear with a poker.

Check ash pan and empty before it is completely full.

Exhaust gas deduster (option)



Monthly:
Take off lid and check the exhaust gas route for clear passage.

Weekly:
Unscrew wing nuts, take off lid and take out ash.

7 Shutdowns

Heating boiler

- **Pipe-type heat exchanger**
  When the *PYROMAT ECO* is put out of operation for a long period (such as for summer breaks), be sure to carefully clean the pipe-type heat exchanger with a steel brush required.

- **Prevent high-temperature corrosion when chipboards are incinerated:**
  If the heating room is moist or there is any other atmosphere that promotes corrosion (e.g. poor ventilation, residual enamel near the heating room, etc.), after carrying out the cleaning, also spray the pipe-type heat exchanger with bio-diesel.

- Remove **encrustation** from the walls of the firebox and boiler with a trowel or flat scraper.

- If there is a **danger of frost**, empty the heating system, following the heating installer's rules, or have anti-frost agent filled.

Control system

Even when the *PYROMAT ECO* is put out of operation for long periods, the power supply to the control system should not be interrupted (do not turn off master switch).

Why?
- The "intermittent control system" switches the consumer pumps on for five seconds every 24 hours. This prevents the pumps from jamming during long standstills. This saves on expensive repairs.
- Avoid the formation of condensation in the lambda sensor.
- Extend the service life of the buffer battery.

8 Waste disposal

Shutting down operation

- Burn out the PYROMAT ECO and let it cool down.
- Disconnect the mains connection to the control cabinet.

IMPORTANT: DANGEROUS VOLTAGE!
Only licensed electrical firms are allowed to disconnect and dismantle the connection to the electrical network.

- Close the forward flow and return flow slide valves.

- Open the drain tap on the bottom of the boiler of the PYROMAT ECO and drain water.

Only heating system installers may drain the boiler and dismantle the connections to the heating system.

- Disconnect the forward flow pipe and return flow pipe from the PYROMAT ECO.

Instructions regarding transport to a different location

The personnel who carry out transports to different locations have to know the dangers involved of accidents that might arise in doing so and use suitable measures to prevent such from happening.

Instructions regarding waste disposal

- Comply with customary laws and regulations on disposing waste.
- Contract a disposal firm to dispose of and recycle waste in an environmentally friendly fashion.

A prerequisite for approval is the express permission for such by the public authority responsible. For claims to the warranty according to Section 11 of our General Terms and Conditions of Delivery, wood fuels have to meet the following conditions. If those conditions are not met, then approval is possible with restrictions (warranty, maintenance, operational safety) with a written statement by the manufacturer in reference to the facility.

1) Non-combustible substances contained

No wood fuels may contain any foreign bodies, such as pieces of metal, stones, masonry remnants or plastics. Nor must the following limits (per kg of dry fuel) for non-combustible substances contained (ash analysed at a temperature of 815°C) be exceeded or fallen short of:

	Limit	Comparison with untreated forest wood
1.1) Chlorine Cl:	max. 300 mg/kg	10 mg/kg
1.2) Sulphur S:	max. 1000 mg/kg	120 mg/kg
1.3) Total Cl, S:	max. 1000 mg/kg	130 mg/kg
1.4) Ash content, total:	max. 15.0 g/kg	5.0 g/kg
1.5) Alkali oxides in the ash (K_2O and Na_2O):	max. 1.0 g/kg	0.35 g/kg
1.6) Sintering point of the ash:	min. 1000°C	approx. 1200°C

Consequence of substantial overstepping of limits (1.1, 1.2, 1.3, 1.5, 1.6):

a) Hot-gas corrosion in the heat exchanger → Special maintenance instructions for heat exchanger
→ Shortened service life of heat exchanger

b) Early sintering and melting of the ash → Special maintenance instructions for firing,
→ Increased maintenance costs (firing, boiler door)

If the maintenance instructions are not followed, a process will be created that builds up in a negative fashion with: → Cinders change the airflow → Temperature peaks → more slag → etc, until there is fast destruction of the refractory materials

1.7) Additives in remnant and used wood: Free of heavy metals and halogen compounds

2) Superfines & dust (wood particles smaller than 1.0 mm as per ÖNORM M 7133)

2.1) Without pre-dryer, max. 10.0% of the total mass; consequence of substantial overstepping of limit:
Temperature peaks → Slag formation → Even higher temperature → etc, to the point of destruction;
→ Special maintenance instructions for firing;
Elevated values are especially critical for remnant wood in combination with elevated values as per 1.1, 1.2

2.2) For forest wood chips with pre-dryer, max 4.0% of the total mass; consequence of substantial overstepping of limit:
→ Moving the exhaust air lines → Special maintenance instructions for cleaning exhaust air line

3) Origin and treatment

3.1) Forest wood and plantation wood (complete trees and trunk wood untreated)
Mature wood from trunks and branches, untreated, chopped as billet wood or chips

3.2) Compressed wood, pellets (conforming to standards, such as: ÖNORM M 7135)
Untreated wood with limited bark content, compressed by machine and calibrated

3.2) Increased proportion of bark, tree cuttings from roadside trees (untreated)
Remnants from the forestry and sawmill industries or from conservation of the countryside (elevated ash content).

3.3) Remnants from derived timber products
Usually a mixture of untreated and treated wood in the form of shavings from processing machinery and chips from choppers that run slowly. In cases of elevated proportions of dust and/or limited storage volumes, these shavings are compressed into briquettes.

3.4) Used wood
This is essentially untreated wood that has been used prior to its energetic utilisation (e.g. pallets). It is reduced in size by shredders for thermal utilisation. The metal parts have to be removed afterwards (by magnetic separators).

4) Particle size: adjustment of the conveyor augers

4.1) G30/G50 chips from untreated wood as per ÖNORM M 7133:
made by fast-running and cutting tools;

	max. coarse fraction	with cross-section	and length
G 30	of 20%	max. 3 cm^2	max. 8.5 cm;
G 50	of 20%	max. 5 cm^2	max. 12 cm;

Required cross-sections of the loading: depends on the boiler output:

		up to 150 kW	up to 500 kW	from 500 kW
Conveyor auger	D	min. 12 cm;	min. 15 cm;	min. 20 cm
Drop cross-section	A	min. 175 cm^2	min. 300 cm^2	min. 600 cm^2

4.2) Chips not from the forest; origin as per 3.2, 3.3, 3.4; briquettes, origin as per 3.3

Size essentially as per ÖNORM M 7133 G50, additionally, however:
- Fraction of one-offs max. 5% with cross-section of max. 5 cm² up to a length of max. 16 cm
- Frayed surface by chopping tools (shredders) or slow-running choppers
- Briquettes, diameter max. D 60 mm (hydraulic compressors, pressure geared to loading system)

Conveyor augers diameter min. 20 cm; drop-off route, rotary valve cross-section min. 600 cm^2

Consequence of overstepping particle size:
- Extra expenditures for correcting malfunctions
- Shortened service life of the conveyor augers and drives

5) Bulk density S (kg/m³), water content W (%), size G (mm) as per ÖNORM M 7133

In automatically loaded boiler plants, the wood fuels that come to be used should be individually listed in offers and orders as follows:

a)	S 130	W10 to W20	G30/50	Sawdust, untreated (planing shop)
b1)	S 200	W20 to W35	G30/50	Sawdust, untreated (sawmill)
b2)	S 200	W20	G30/50	Forest wood chips, soft, untreated
c1)	S 250	W20 to W35	G30/50	Forest wood chips, soft, untreated
c2)	S 250	W35 to W50	G30/50	Sawdust, untreated (sawmill)
d1)	S 300	W20 to W35	G30/50	Forest wood chips, soft/hard, untreated
d2)	S 300	W35 to W50	G30/50	Forest wood chips, soft, untreated
e1)	S 350	W20 to W35	G30/50	Forest wood chips, hard, untreated
e2)	S 350	W35 to W50	G30/50	Forest wood chips, soft/hard, untreated
e3)	S 350	W50 to W60	G30/50	Forest wood chips, soft, untreated
f1)	S 400	W35 to W50	G30/50	Forest wood chips, hard, untreated
f2)	S 400	W50 to W60	G30/50	Forest wood chips, soft/hard, untreated
g)	S 130	less than W15	G30/50	Shavings & chips from wood remnants, dry, mixed
h)	S 200	less than W15	G30/50	Shavings & chips from wood remnants, dry, mixed
i)	S 250	less than W15	G30/50	Shavings & chips from wood remnants, dry, mixed
j)	S 350	less than W15	G30/50	Briquettes from wood remnants D 40 to 60 mm
k1)	S 650	less than W10		Pellets conforming to standards, untreated D 6 to 10 mm
k2)	S 650	less than W10		Pellets conforming to standards, untreated D 11 to 15 mm

6) Maximum water content allowed, W, (percentage by weight of the total mass)

The maximum water content allowed in the fuel when entering the furnace should be taken from the spec sheets for the furnace series. With a pre-dryer installed between the furnace and the fuel storage site, extra water content can be in the fuel stored (see specifications in reference to the order). The water content influences the maximum furnace output possible, the heat emission required to the pre-dryer and thus the maximum heat emission possible to the consumers.

7) Other information

7.1) Ash and cleaning

Untreated wood without bark has a proportion of ash less than 0.5% of the fuel mass supplied. All the specifications regarding cleaning involved are based on untreated wood with bark attached with an ash amount of 0.8%. The cleaning and maintenance involved for other wood fuels should be adapted according to the amount, the specific weight and the behaviour of the ash.

7.2) Changing fuels

A great change in fuel quality, such as bulk density, water content, dust proportion or ash content might make a manual correction of the firing parameters necessary (see Operating Manual).

8) Non-woody fuels from biomass

Non-woody fuels from biomass, such as needles, foliage, grain, straw, fruit pits, etc, are usually unsuited as fuel for trouble-free operation and thus are not approved.

9) Wood fuels: rules, regulations and standards

Germany: 1st BImSchV[1] dated 14 Mar 97, amended on 2 Aug 2001; page: Fuels nos. 5 to 7
Austria: FAV dated 18 Nov 1997 "Feuerungsanlagenverordnung" (Furnaces Act § 3.(1) 3. Solid Fuels
Switzerland: Luftreinhalteverordnung LRV (Swiss Clean Air Act) dated 16 Dec 1985 (Standing: 28 Mar 2000)

DIN 51731	Compressed Wood from Untreated Wood (1993)
ÖNORM M 7135	Compressed Wood from Untreated Wood or Untreated Bark (1998)
ÖNORM M 7136	Wood Pellets, Quality Assurance, Transport Logistics and Storage Logistics
ÖNORM M 7133	Wood Chips for Energetic Purposes (1998)
EN 303-5	Heating Boilers for Solid Fuels, Table 8 "Test Fuels“
CEN/TS 14961	Solid Organic Fuels

[1] *BImSchV* = *Bundes-Immissionsschutzverordnung* [German Federal Emissions Control Act]

Malfunction report / malfunction remedy

Heat Generation				
No.	**Text displayed for malfunction**	**Malfunction alarm**	**Possible cause**	**Check / Remedy**
01	**Excess temperature** (F1, F2, F3 lights up red)	- Temperature-limiting safety switch (TLSS) in the front metal plate for the refill access lid.	- Filled with too much wood - Incorrect setting on the control module - Defective component (pump, valve or temperature sensor)	- Check storage temperature before heating up and before re-feeding. Can the anticipated energy be collected or stored? - Control burner circuit pump, burner control valve and temperature sensor. - Activate the function “Dissipate excess heat”. - On the TLSS, screw off the protective cap and press the reset button (not possible until the burner temperature is less than 70°C) and press OK.
03-17	**Interruption or short-circuit, sensor** (F3 lights up red)	- Sensor . . .	- Damage to the sensor connecting line - Malfunction alarm defective	- Call in electrician
09	**Lambda sensor** (F3 lights up red)	- Lambda sensor on the back of the burner	- Malfunction alarm very soiled - Malfunction alarm defective - Error in the electronics	- Readjust lambda sensor - Acknowledge with OK
18	**Permanent code** (F3 lights up red)	- Operating hours lapsed before the permanent code has been entered.	- Permanent code has not been entered	- Call burner supplier
19	**Repeat heating up** (F3 lights up red)	- Exhaust gas sensor - Lambda sensor	- Fuel too moist - Lambda sensor imprecise - Poorly filled with logs	- Use suitable, dry fuel. - Readjust lambda sensor. - Acknowledge with OK
81-93	**BUS error, no connection to the . . .** **(F3 lights up red)**	- Data transmission line for the bus connection	- Bus connection interrupted	- Check plug connections - Briefly disconnect power supply - Replace data transmission line - Call supplier

Heat Distribution				
No.	**Text displayed for malfunction**	**Malfunction alarm**	**Possible cause**	**Check / Remedy**
01-27	**Interruption or short-circuit, sensor . . .** (F… lights up red)	- Sensor . . .	- Damage to the sensor connecting line - Malfunction alarm defective	- Call in electrician

Leerseite für Notizen:
Blank page for notes:
Page en blanc pour des notationes:

Leerseite für Notizen:
Blank page for notes:
Page en blanc pour des notationes:

KÖB Holzfeuerungen GmbH, Flotzbachstrasse 33, A-6922 Wolfurt
Tel +43 55 74 / 67 70-0, Fax +43 55 74 / 65 7 07
office@kob.cc, www.koeb-holzfeuerungen.com
Viessmann Group

Verkaufs-Niederlassungen und dazugehörige Service-Außenstellen:

(1) **ZENTRALE**:
Flotzbachstrasse 33, A-6922 Wolfurt
Tel +43 55 74 / 67 70-0
Fax +43 55 74 / 65 7 07
office@kob.cc

(1) **ÖSTERREICH – NORD / OST**
A-4906 Eberschwang
Tel +43 77 53 / 32 65
Fax +43 77 53 / 32 65
helmut.fuchsberger@kob.cc

(1) **ÖSTERREICH – SÜD / OST**
A-8230 Hartberg Greinbach
Tel +43 33 32 / 64 2 12
Fax +43 33 32 / 63 6 16
martin.nussdorfer@kob.cc

(1) **VERTRIEBSTOCHTER SCHWEIZ**
KÖB Wärmetechnik AG
CH-9430 St. Margrethen
Tel +41 848 / 87 08 10
Fax +41 848 / 87 08 11

(1) **SCHWEIZ – ZENTRAL / OST**
CH-9243 Jonschwil
Tel +41 71 / 92 38 2 80
Fax +41 71 / 92 38 2 82
josef.meier@kob.cc

(1) **SCHWEIZ – ZENTRAL / NORD**
CH-4704 Niederbipp
Tel +41 32 / 63 30 7 10
Fax +41 32 / 63 30 7 11
adrian.rippstein@kob.cc

(1) **DEUTSCHLAND – SÜD / WEST**
D-72639 Neuffen
Tel +49 70 25 / 80 42
Fax +49 70 25 / 83 69 6
gerald.sieler@kob.cc

(1) **DEUTSCHLAND – SÜD / MITTE**
D-89278 Nersingen
Tel +49 73 08 / 91 00 10
Fax +49 73 08 / 52 66
hans.amann@kob.cc

(1) **DEUTSCHLAND – SÜD / OST**
D-82549 Königsdorf
Tel +49 8179 / 92 95 65
Fax +49 8179 / 92 95 66
roland.metzner@kob.cc

● **DEUTSCHLAND – NORD / WEST**
D-44579 Castrop-Rauxel
Tel +49 23 05 / 7 38 91
Fax +49 23 05 / 8 37 62
koeb-nw@t-online.de

● **DEUTSCHLAND – MITTE / OST**
D-89278 Nersingen
Tel +49 7308 / 811347
Fax +49 7308 / 811387
tobias.amann@kob.cc

(1) **DEUTSCHLAND – NORD / OST**
D-16727 Oberkrämer/ OT Eichstätt
Tel +49 33 04 / 31 70 8
Fax +49 33 04 / 31 70 8
wolfgang.ratzka@kob.cc

(2) **KOB Italia S.r.l.**
I-36063 Marostica
Tel +39 0424 8 10 50
Fax +39 0424 47 34 45
italia@kob.cc

(1) **LUXEMBOURG**
D-72639 Neuffen
Tel +49 70 25 / 80 42
Fax +49 70 25 / 83 69 6
gerald.sieler@kob.cc

(3) **FRANCE**
F-04300 Forcalquier
Tel. +33 492 / 73 10 80
Fax: +33 492 / 73 10 80
servicefrance@kob.cc

● **FRANCE - OVEST**
F-79160 Coulonges/L'Autize
Tel. +33 549 / 06 06 60
Fax +33 549 / 06 00 60
energie79@wanadoo.fr

1 Serviceleitstelle Zentrale Wolfurt
KÖB Holzfeuerungen GmbH, Flotzbachstrasse 33, A-6922 Wolfurt
Tel +43 55 74 / 67 70-0, Fax +43 55 74 / 65 7 07, office@kob.cc

2 Serviceleitstelle für Italien
KOB Italia S.r.l., I-36063 Marostica
Tel +39 0424 78 10 50, Fax +39 0424 47 34 45, italia@kob.cc

3 Serviceleitstelle für Frankreich
F-04300 Forcalquier, Tel. +33 492 / 73 10 80, Fax: +33 492 / 73 10 80
servicefrance@kob.cc

SERVICE – EST: Electromatic – sarl, F-67550 Vendenheim
Tel +33 607 / 64 06 31, Fax +33 38 / 86 93 7 60. servicefrance@kob.cc

● Verkaufsorganisation mit eigenem Service

● **NORGE**
AS Morgan
N-3933 Porsgrunn
Tel. +47 355 / 693 00
Fax: +47 355 / 693 15
fyk@asmorgan.no

● **NEDERLAND / BELGIE**
LVB Wood Drying + Energy Systems BV
NL-4141 BE Leerdam
Tel. +31 345 / 61 97 88
Fax: +31 345 / 61 69 05
office@lvb-wood.nl

● **UNITED KINGDOM**
3G Energi
UK – TD5 7BH, Kelso
Tel. +44 1573 22 91 98
Fax. +44 870 706 2555
enquiries@3genergi.co.uk

● **KÖB SVERIGE AB**
S-65350 Karlstad
Tel. +46 54 53 69 87
Fax. +46 54 53 18 43
bengt.nilsson@fbp.se

● **IRLAND**
Clearpower Ltd.
Dublin 2
Tel. +35 31 66 90 979
Fax. + 35 31 66 90 978
info@clearpower.ie

● **CANADA**
Fink Machine Inc.
Enderby B.C
Tel. (001) 250 83 80 077
Fax. (001) 250 83 800 68
fink@jetstream.net